

REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed October 11, 2007. Upon entry of the amendments in this response, claims 1 – 9 and 13 – 25 remain pending. In particular, Applicants amend claims 1, 13, and 16 and add claims 24 and 25. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

I. Claim 1 is Allowable Over *Terry* in view of *Corazza*

The Office Action indicates that claim 1 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,055,297 ("*Terry*") in view of U.S. Publication Number 2003/0133409 ("*Corazza*"). Applicants respectfully traverse this rejection for at least the reason that *Terry* in view of *Corazza* fails to disclose, teach, or suggest all of the elements of claim 1.

More specifically, claim 1 recites:

A method for multiple inputs, multiple outputs (MIMO) power spectral density (PSD) allocation in a digital subscriber line (DSL) system, the method comprising:

monitoring system performance by performing a multi-ended line test (MELT);

processing the MELT; and

allocating PSD based on at least one of the following: system coupling power and system traffic, the allocating PSD based on system coupling power comprising a full mask control scheme, ***the full mask scheme configured for a central office to communicate the allocated PSD to a customer premises to re-compute a bit-loading using a seamless rate adaptation (SRA) procedure.***

(emphasis added)

Applicants respectfully submit that claim 1, as amended, is allowable over the cited art for at least the reason that neither *Terry* nor *Corazza*, alone or in combination, discloses, teaches, or suggests a "method for multiple inputs, multiple outputs (MIMO) power spectral density (PSD) allocation in a digital subscriber line (DSL) system, the method comprising... allocating PSD based on at least one of the following: system coupling power and system traffic, the allocating PSD based on system coupling power comprising a full mask control scheme, ***the***

full mask scheme configured for a central office to communicate the allocated PSD to a customer premises to re-compute a bit-loading using a seamless rate adaptation (SRA) procedure" as recited in claim 1, as amended. More specifically, *Terry* discloses "[t]he power spectra of signals supplied to the first and second ends of the line can be adjusted in dependence upon the power spectra of crosstalk monitored at the second and first ends, respectively, of the line" (col. 4, lines 2 – 6). Applicants respectfully submit that this is different than claim 1, as amended, for at least the reason that supplying power spectra of signals is different than communicating a PSD to a customer premises to re-compute a bit loading using a seamless rate adaptation procedure.

Additionally, *Corazza* fails to overcome the deficiencies of *Terry*. More specifically, *Corazza* discloses "[a]t the subscriber station resides information about... traffic source state (for example buffer state, buffer overflow, average throughput in the past, delay statistics)" (page 2, paragraph [0015]). Applicants respectfully submit that this is different than claim 1, as amended, for at least the reason that storing information at the subscriber station is different than communicating a PSD to a customer premises to re-compute a bit loading using a seamless rate adaptation procedure, as recited in claim 1, as amended. For at least these reasons, claim 1, as amended, is allowable.

II. Claims 2 – 9 and 21 – 23 are Allowable Over *Terry* in view of *Corazza*

The Office Action indicates that claims 2 – 9 and 21 – 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,055,297 ("*Terry*") in view of U.S. Publication Number 2003/0133409 ("*Corazza*"). Applicants respectfully traverse this rejection for at least the reason that *Terry* in view of *Corazza* fails to disclose, teach, or suggest all of the elements of claims 2 – 9 and 21 – 23. More specifically, dependent claims 2 – 9 and 21 – 23 are believed to be allowable for at least the reason that these claims depend from allowable

independent claim 1. *In re Fine, Minnesota Mining and Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

III. Claim 13 is Allowable Over *Terry* in view of *Ketchum*

The Office Action indicates that claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,055,297 ("*Terry*") in view of U.S. Patent Number 7,116,725 ("*Ketchum*"). Applicants respectfully traverse this rejection for at least the reason that *Terry* in view of *Ketchum* fails to disclose, teach, or suggest all of the elements of claim 13. More specifically, claim 13 recites:

A system for dynamically monitoring and allocating upstream and downstream power spectral density (PSD) of a transceiver set, the system comprising:

a monitor for performing multi-ended line tests (MELT);

a controller, responsive to the monitor, for performing multiple inputs, multiple outputs (MIMO) dynamic PSD allocation of upstream and downstream PSD, ***the controller further configured to implement a full mask scheme for a central office to communicate the allocated PSD to a customer premises to re-compute a bit-loading using a seamless rate adaptation (SRA) procedure;*** and

a table of upstream PSD and downstream PSD for each time (t) and each line.

(emphasis added)

Applicants respectfully submit that claim 13, as amended, is allowable over the cited art for at least the reason that neither *Terry* nor *Ketchum*, alone or in combination, discloses, teaches, or suggests a "system for dynamically monitoring and allocating upstream and downstream power spectral density (PSD) of a transceiver set, the system comprising... a controller... ***configured to implement a full mask scheme for a central office to communicate the allocated PSD to a customer premises to re-compute a bit-loading using a seamless rate adaptation (SRA) procedure***" as recited in claim 13, as amended. More specifically, *Terry* discloses "[t]he power spectra of signals supplied to the first and second ends of the line can be adjusted in dependence upon the power spectra of crosstalk monitored at the second and first ends, respectively, of the line" (col. 4, lines 2 – 6). Applicants

respectfully submit that this is different than claim 13, as amended, for at least the reason that supplying power spectra of signals is different than communicating a PSD to a customer premises to re-compute a bit loading using a seamless rate adaptation procedure.

Additionally, *Ketchum* fails to overcome the deficiencies of *Terry*. More specifically, *Ketchum* discloses "singular value decomposition and 'water-pouring results' to derive pulse-shaping and beam-steering solutions" (col. 2, lines 40 – 42) where "the downlink and uplink are allocated different frequency bands" (col. 9, lines 3 – 4). However, *Ketchum* fails to disclose anything related a controller configured to communicate a PSD to a customer premises to re-compute a bit loading using a seamless rate adaptation procedure, as recited in claim 13, as amended. For at least these reasons, claim 13, as amended, is allowable.

IV. **Claim 16 is Allowable Over *Terry* in view of *Ketchum***

The Office Action indicates that claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,055,297 ("*Terry*") in view of U.S. Patent Number 7,116,725 ("*Ketchum*"). Applicants respectfully traverse this rejection for at least the reason that *Terry* in view of *Ketchum* fails to disclose, teach, or suggest all of the elements of claim 16. More specifically, claim 16 recites:

A system for multiple inputs, multiple outputs (MIMO) dynamic monitoring and allocation of upstream and downstream power spectral density (PSD) of a transceiver set, the system comprising:
a monitor for performing multi-ended line tests (MELT) on components within the DSL system;
a controller, for performing MIMO dynamic allocation of upstream and downstream PSD for the components within the DSL system, wherein the controller is responsive to at least one of the monitor and a priori knowledge received from components within the DSL system, the controller further ***configured to implement a full mask scheme for a central office to communicate the allocated PSD to a customer premises to re-compute a bit-loading using a seamless rate adaptation (SRA) procedure***; and
a table of upstream PSD and downstream PSD for each time (t) and each line.

(emphasis added)

Applicants respectfully submit that claim 16, as amended, is allowable over the cited art for at least the reason that neither *Terry* nor *Ketchum*, alone or in combination, discloses, teaches, or suggests a “system for multiple inputs, multiple outputs (MIMO) dynamic monitoring and allocation of upstream and downstream power spectral density (PSD) of a transceiver set, the system comprising... a controller... **configured to implement a full mask scheme for a central office to communicate the allocated PSD to a customer premises to re-compute a bit-loading using a seamless rate adaptation (SRA) procedure**” as recited in claim 16, as amended. More specifically, *Terry* discloses “[t]he power spectra of signals supplied to the first and second ends of the line can be adjusted in dependence upon the power spectra of crosstalk monitored at the second and first ends, respectively, of the line” (col. 4, lines 2 – 6). Applicants respectfully submit that this is different than claim 16, as amended, for at least the reason that supplying power spectra of signals is different than communicating a PSD to a customer premises to re-compute a bit loading using a seamless rate adaptation procedure.

Additionally, *Ketchum* fails to overcome the deficiencies of *Terry*. More specifically, *Ketchum* discloses “singular value decomposition and ‘water-pouring results’ to derive pulse-shaping and beam-steering solutions” (col. 2, lines 40 – 42) where “the downlink and uplink are allocated different frequency bands” (col. 9, lines 3 – 4). However, *Ketchum* fails to disclose anything related a controller configured to communicate a PSD to a customer premises to re-compute a bit loading using a seamless rate adaptation procedure, as recited in claim 16, as amended. For at least these reasons, claim 16, as amended, is allowable.

V. Claims 14 – 15 and 17 – 20 are Allowable Over *Terry* in view of *Ketchum*

The Office Action indicates that claims 14 –15 and 17 – 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,055,297 ("*Terry*") in view of U.S. Patent Number 7,116,725 ("*Ketchum*"). Applicants respectfully traverse this rejection for at least the reason that *Terry* in view of *Ketchum* fails to disclose, teach, or suggest all of the elements of claims 14 – 15 and 17 – 20. More specifically, dependent claims 14 – 15 are believed to be allowable for at least the reason that these claims depend from allowable independent claim 13. Further, dependent claims 17 – 20 are believed to be allowable for at least the reason that they depend from allowable independent claim 16. *In re Fine, Minnesota Mining and Mfg.Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

VI. New Claims 24 and 25 are Allowable

A. New Claim 24

Applicants add new claim 24 and submit that new claim 24 is allowable for at least the reason that the cited art fails to disclose a "system for multiple inputs, multiple outputs (MIMO) power spectral density (PSD) allocation in a digital subscriber line (DSL) system, the method comprising... means for allocating PSD based on at least one of the following: system coupling power and system traffic, the allocating PSD based on system coupling power comprising a full mask control scheme, the full mask scheme configured for a central office to communicate the allocated PSD to a customer premises to re-compute a bit-loading using a seamless rate adaptation (SRA) procedure" as recited in new claim 24. For at least this reason, Applicants respectfully request allowance of this claim.

B. New Claim 25

Additionally, Applicants add new claim 25. New claim 25 is allowable for at least the reason that this claim depends from allowable independent claim 24. *In re Fine, Minnesota Mining and Mfg.Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested.

Any other statements in the Office Action that are not explicitly addressed herein are not intended to be admitted. In addition, any and all findings of inherency are traversed as not having been shown to be necessarily present. Furthermore, any and all findings of well-known art and Official Notice, or statements interpreted similarly, should not be considered well-known for the particular and specific reasons that the claimed combinations are too complex to support such conclusions and because the Office Action does not include specific findings predicated on sound technical and scientific reasoning to support such conclusions.

If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,

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